

### **AMENDMENTS TO THE CLAIMS**

Applicants submit below a complete listing of the current claims, including marked-up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing. This listing of claims replaces all prior versions, and listings, of claims in the application:

#### **Listing of the Claims**

1. (Currently Amended) A processing system for accessing data, the processing system comprising:

a processor comprising an execution unit for executing instructions;

a stream register unit being part of the processor and configured to supply a first type of data to the ~~processor~~ execution unit, the first type of data being data supplied from a peripheral, the stream register unit including at least one stream register unit FIFO configured to store the first type of data received from the peripheral;

a FIFO coupled to the peripheral to receive said first type of data from the peripheral and connected to the stream register unit by a communication path, along which said first type of data can be supplied from the FIFO to the at least one stream register unit FIFO; and

a memory bus, separate from the communication path, connected between a data memory and the processor, across which the processor can access a second type of data, the second type of data being randomly accessible data held in the data memory;

wherein the first type of data is supplied via the communication path directly from the FIFO coupled to the peripheral to the stream register unit of the processor and the second type of data is supplied via the memory bus, separate from the communication path, between the data memory and the processor.

2. (Canceled)

3. (Original) A processing system according to claim 1, wherein data is supplied from the FIFO to the stream register unit in accordance with requests for data made by the processor to the stream register unit and forwarded to the FIFO.

4. (Original) A processing system according to claim 3, wherein the said requests are made as accesses to volatile variables.

5. (Original) A processing system according to claim 3, wherein the FIFO is arranged to, upon receiving a request for data from the stream register unit, send a signal to the stream register unit indicating availability of the requested data.

6. (Original) A processing system according to claim 5, wherein if the FIFO contains the requested data, the said signal to the stream register unit indicates that the data is available, and the FIFO is further arranged to send a signal to the stream register unit comprising the data.

7. (Currently Amended) A processing system according to claim 6, wherein the stream register unit is arranged to, following receipt of the signal comprising the data, supply the data to the execution unit ~~processor~~.

8. (Original) A processing system according to claim 6, wherein the stream register unit is arranged to, following receipt of the signal comprising the data, send a signal to the FIFO indicating that it has taken the data.

9. (Original) A processing system according to claim 8, wherein the said signal to the FIFO further indicates the next location in the FIFO from which data is required.

10. (Original) A processing system according to claim 5, wherein the FIFO is further arranged to, if it does not contain the requested data, send a different signal to the stream register unit indicating that the data is not available.

11. (Currently Amended) A processing system according to claim 10, wherein the stream register unit is arranged to, if the signal sent by the FIFO is the said different signal indicating that the data is not available, send a stall signal to the execution unit ~~processor~~, causing the processor to stop executing instructions.

12. (Original) A processing system according to claim 10, wherein the FIFO is further arranged to, if following sending of the said different signal to the stream register unit the data subsequently becomes available, send a signal to the stream register unit indicating that the data is available, and to send a signal comprising the data to the stream register unit.

13. (Currently amended) A processing system according to claim 5, further comprising a timeout generator, arranged for communication with the processor and the stream register unit, and arranged to, if the signal sent by the FIFO is a signal indicating that the data is not available, after a predetermined period of time, send a timeout signal to the execution unit ~~processor~~, causing the processor to interrupt such that it can execute other instructions.

14. (Currently amended) A processing system according to claim 13, wherein, if following sending of the timeout signal to the execution unit ~~processor~~ the data subsequently becomes available, the timeout generator is arranged to receive a signal instructing it to cease sending the timeout signal, and to, upon receipt of the said instruction, cease sending the timeout signal.

15. (Currently Amended) A processing system according to claim 13, wherein the stream register unit is arranged to, if following sending of the timeout signal to the execution unit ~~processor~~ the data subsequently becomes available, send the data to the execution unit ~~processor~~.

16. (Original) A processing system according to claim 1, wherein the stream register unit is associated with a register file containing a plurality of registers and a load/store unit arranged to receive data from the stream register unit and temporarily store the data in the register file.

17. (Currently Amended) A processing system according to claim 16, wherein the execution unit ~~processor~~ is arranged to retrieve data from the register file.

18. (Currently Amended) A processing system according to claim 1, wherein data is supplied from the FIFO to the stream register unit in accordance with requests for data made by the processor to the stream register unit and forwarded to the FIFO, wherein the stream register unit is associated with a register file containing a plurality of registers and a load/store unit arranged to receive data from the stream register unit and temporarily store the data in the register file, wherein the execution unit ~~processor~~ is further arranged to make requests for data to the stream register unit via the load/store unit.

19. (Currently Amended) A processing system according to claim 1, wherein the stream register unit comprises one or more FIFOs connected to receive data from the FIFO connected to the stream register unit and supply the data to the execution unit ~~processor~~.

20. (Original) A processing system according to claim 3, wherein the request for data is a request for a single data item.

21. (Original) A processing system according to claim 1, further comprising one or more additional FIFOs linked together between the said FIFO and the communication channel.

22. (Original) A processing system according to claim 1, wherein the data from the peripheral is video data.

23. (Previously presented) A processing system according to claim 22, wherein the peripheral is a video processing system.

24. (Currently amended) A streaming data handling system, comprising:  
a processor comprising an execution unit for executing instructions;

a stream register being part of the processor and configured to supply data from a peripheral to the processor, the stream register including at least one stream register FIFO configured to store the data received from the peripheral; and

a FIFO memory coupled to the peripheral to receive the data from the peripheral and connected to the least one stream register FIFO via a communication path,

wherein the stream register and the FIFO operate the same data handling protocol such that the stream register can receive streamed data items from the FIFO memory and supply them to the processor in the received order.

25. (Currently amended) A system according to claim 24, further comprising a timeout generator, arranged for communication with the execution unit ~~processor~~ and the stream register, and arranged to, if the signal sent by the FIFO is a signal indicating that the data is not available, after a predetermined period of time, send a timeout signal to the execution unit ~~processor~~, causing the processor to interrupt such that it can execute other instructions.

26. (Currently amended) A stream register being part of a processor comprising an execution unit, the stream register being connectable between a processor the execution unit and a peripheral, the stream register being part of the processor and comprising:

a receiver arranged to receive a request for a data item from the execution unit ~~processor~~;  
at least one FIFO configured to store the data item received from the peripheral; and  
a stream engine, arranged to:

receive the request for the data item;

determine whether the requested data item is in the at least one FIFO;

if the requested data item is not in the at least one FIFO, send a stall signal to the execution unit of the processor; and

send the request to the peripheral and receive one or more signals back from the peripheral indicating availability of the requested data item, and, if the data item is available, send the data item to the processor, and, if the data item is not available and if the stall signal has been active for a predetermined amount of time, send a timeout signal to the execution unit of the processor causing the processor to interrupt such that it can execute tasks other than the request.

27. (Currently amended) A stream register according to claim 26, wherein the stream engine is arranged to send the interrupt timeout signal to the execution unit of the processor after a predetermined period of time.

28. (Currently amended) A stream register according to claim 27, wherein the stream engine is further arranged to, if the data is available, temporarily store the data in a register file for access by the execution unit of the processor.

29. (Currently amended) A stream register according to claim 27, wherein the stream engine is further arranged to, following sending of the timeout signal to the execution unit of the processor, if the data item subsequently becomes available, receive a signal instructing it to cease sending the timeout signal, and to, upon receipt of the ~~said~~ instruction, cease sending the timeout signal to the execution unit of the processor and temporarily store the data in a register file for access by the execution unit ~~processor~~.

30. (Currently amended) A stream register[[,]] being part of a processor[[,]] comprising an execution unit, the stream register being connectable between the execution unit ~~processor~~ and a memory, the stream register comprising:

a receiver arranged to receive a request for a data item from the execution unit of the processor;

at least one FIFO configured to store the data item received from [[the]] a peripheral; and

a stream engine, arranged to:

receive the request for the data item;

determine whether the requested data item is in the at least one FIFO;

if the requested data item is not in the at least one FIFO, send a stall signal to the execution unit of the processor; and

send the request to the memory and receive one or more signals back from the memory indicating availability of the requested data item, and, if the data item is available, send the data item to the execution unit of the processor, and, if the data item is not available and if the stall signal has been active for a predetermined amount of time, send a timeout signal to the

execution unit of the processor causing the processor to interrupt such that it can execute tasks other than the request.